PATENT

Atty. Docket No.: 006915 USA P02/FEP/P3I/PJT
RW Ref. No.: APM/001-02-CP1-2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Kenneth Collins, et al.	
Entitled: PLASMA IMMERSION ION IMPLANTATION APPARATUS USING A PLASMA SOURCE HAVING LOW DISSOCIATION ANDLOW MINIMUM PLASMA VOLTAGE	Group Art Unit: 2893
Application Serial No.: 10/646,533	Examiner: Jack S. Chen
Application Filing Date: 08/22/2003	

LETTER TO THE EXAMINER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached please find a copy of an official action in a related application already of record in the present application (official action dated 07/01/2009 in Appln. Serial No. 11/551,196).

Respectfully submitted,

Dated 7/16/2009

Robert M. Wallace
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/551,196	10/19/2006	Amir Al-Bayati	6915/D01/IMPLANT/P3i	9921

44843 7590 07/01/2009
LAW OFFICE OF ROBERT M. WALLACE
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EXAMINER	
WARRIOR, TANIKA D	
ART UNIT	PAPER NUMBER
2892	
MAIL DATE	DELIVERY MODE
07/01/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	11/551,196	AL-BAYATI ET AL.
	Examiner	Art Unit
	TANIKA WARRIOR	2892

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,14,16 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,14,16 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 October 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/17/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 7, 2009 has been entered.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-6, 14 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura (US 6,034,418), of record.

In regard to claim 1:

- Matsuura teaches a material comprising a dielectric layer (103, Fig. 8: silicon oxide film) containing gas bubbles (see Fig. 6: rings) of a gaseous species into said layer, individual ones of said gas bubbles containing plural atoms of said gaseous species (col. 5, lines 25-28: "or in combination"), said plural atoms constituting a gas at a gas pressure within the individual gas bubble (103, Fig. 8: "fluorine [gas]-containing silicon oxide film" (103 or 4); although no "bubble" is clearly shown in the drawing. Matsuura shows in fig. 6(a) the dielectric contains rare gas such as argon and others and voids, col. 5 lines 15-25. Therefore,

obviously such rare gas and voids as disclosed by Matsuura would have read on the gaseous species as claimed).

- The limitation formed by ion implantation of a gaseous species into said layer is not germane to the issue of patentability of the material itself because even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See MPEP 2113.

In regard to claim 2:

- Matsuura teaches a porosity of between 5% and 50% by volume of said dielectric layer (col. 1, line 31).

In regard to claims 3 & 4:

- Matsuura teaches wherein said gaseous species forms a gas (col. 2, line 4) and comprises one or a combination of neon, argon, krypton, xenon, fluorine (col. 2, line 16).

In regard to claim 5:

- Matsuura teaches an average diameter of between about 1nm and 10nm (Fluorine has an atomic diameter of 1.14; the atomic diameter is computed using quantum mechanical calculations, Periodic Chart of the Atoms (1979), Sargent-Welch).

In regard to claim 6:

- Matsuura teaches wherein the material is non-crystalline (the material SiOF, used as fluorosilicate *glass* is non-crystalline: evidence that SiOF is interchangeable as a fluorosilicate glass is found in US 2001/0016419 A1 [0015])

In regard to claim 14:

- Matsuura teaches an integrated circuit comprising a semiconductor substrate (101, Fig. 8) and plural films (103, 105, 106) on said semiconductor substrate, at least one of said films being an insulation layer (103).
- With respect to bubbles, see discussion in claim 1 above.

In re to claim 17:

- With respect to the random distribution of the gas bubbles within the material, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art (i.e., containing a distribution of gas bubbles), the claim is unpatentable even though the prior product was made by a different process.

4. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura in view of Merzhanov et al. (US 4,217,948).

In regard to claim 16:

- Matsuura teaches the device as discussed above.

- Yet, Matsuura fails to teach wherein said gas bubbles are pressurized above ambient pressure.
- However, Merzhanov does teach that elevated pressure makes it possible to materially decrease porosity in the internal oxide layer of a two-layer pipe, which is ordinarily caused by the formation of gas bubbles in the oxide layer after its solidification (col. 6, lines 15-19).
- Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teaching of Merzhanov with Matsuura in order to reduce the thickness of the porous dielectric (as previously taught by Cho) by pressurizing the gas bubbles above ambient pressure.

Response to Arguments

5. Applicant's arguments filed April 24, 2009 have been fully considered but they are not persuasive.

6. In response to applicant's argument that the prior art reference, Matsuura, fails to teach gas bubbles containing plural gases but only teaches a single gas (i.e., Argon) filling a small void, the examiner would like to point out that due to the wording of the claim(s), gas bubble can be and has been interpreted to include the three- or four-membered rings that make up the material 103. The size of the gas, or gas bubble(s), is an obvious matter of design choice that would involve a mere change in the size of a component, which is generally recognized as being within the level of ordinary skill in the art. See MPEP 2144.04.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANIKA WARRIOR whose telephone number is (571)270-5018. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thao Le can be reached on (571)272-1708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thao X Le/
Supervisory Patent Examiner, Art Unit 2892

/T. W./
Examiner, Art Unit 2892

Notice of References Cited	Application/Control No. 11/551,196	Applicant(s)/Patent Under Reexamination AL-BAYATI ET AL.	
	Examiner TANIKA WARRIOR	Art Unit 2892	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-4,217,948	08-1960	Merzhanov et al.	164/115
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT Sheet 1 of 1	Application Number: 11/551,196 Filing Date: 10/19/2006 First Named Inventor: Al-Bayati, et al. Group Art Unit: 2892 Examiner Name: Tanika D. Warrior Attorney Docket Number: 006915 USA Y1/FEP/P3I/PJT

U. S. PATENT DOCUMENTS

Examiner Initials	Document No	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Class	Subclass	Filing Date MM-DD-YYYY
	US-5,751,537	05/12/1998	KUMAR ET AL.	361	234	05/02/1996
	US-6,558,508	05/06/2003	KAWAKAMI ET AL.	361	234	361/234

FOREIGN PATENT DOCUMENTS

Examiner Initials	Foreign Patent Document	Publication Date	Country	Name of Patentee or Applicant of Cited Document	Translation? (Yes/No/n/a)

Examiner Initials	**NON PATENT LITERATURE DOCUMENTS** (Include the name of the author (in CAPITAL LETTERS), title of the article (where appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.

Examiner's Signature: /Tanika Warrior/ Date Considered: 06/25/2009

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.W./